

Appl. No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

REMARKS

The Examiner is thanked for the telephone interview of May 26, 2004. Claims 1 - 19 are pending in the present Application. In the above-identified Office Action, the Examiner objected to the DRAWINGS, the SPECIFICATION and to Claims 1 - 19. In addition, Claims 1, 2, 5, 7 - 17 and 19 were rejected under 35 U.S.C. §102(e) as being anticipated by St. Pierre et al. (US Patent 6,269,381). Claims 3, 4, 6 and 18 were indicated to be allowable if rewritten and/or amended to overcome all the technical rejections made thereto as well as to include all the limitations of the base claim and any intervening claims.

In response to the objection to the DRAWINGS as well as the objection to the SPECIFICATION, Applicants have amended the SPECIFICATION to correct the errors that prompted the objections. For example, Applicants have replaced the erroneous reference numerals used in the SPECIFICATION with the correct reference numerals found in Fig. 4. In addition, Applicants have added some text in the SPECIFICATION that lists every element, including each element's reference numeral, found in Fig. 5. As a result, Applicants believe that corrections to the DRAWINGS are unnecessary.

Applicants have further provided the serial number and filing date of the Application referenced in the SPECIFICATION. Due to the foregoing, Applicants submit that the SPECIFICATION has been cured of all informalities.

In response to the objections made to the claims, Applicants have amended all independent Claims to specify,

AUS920010863US1

Appl. No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

in one fashion or another, that the two storage systems are incompatibly formatted with each other. Further, Claims 1, 11, 14 and 17 are amended to specify that there are two logical volume managers (LVMs), each one of them managing a storage system. Consequently, Applicants believe that there is sufficient antecedent basis for the use of "the two LVMs in Claim 2.

Claim 3 is replaced with new independent Claim 20 which includes the limitations of base Claim 1 and intervening claim 2. Consequently, Claim 3 has been canceled.

Claim 4 has been amended to state that the data is forwarded to "the LVM that is not performing the determining step" instead of to "the other LVM". Claim 4 is also amended to depend on Claim 20 instead of canceled Claim 3.

Claim 6 is replaced with new independent Claim 21 which includes the limitations of base Claim 5. Consequently, Claim 6 has been canceled.

Claims 7, 13, 16 and 19 have been amended to state that the data is incompatible with data stored in storage systems that are ordinarily used by a computer system that is reading the data. And, Claim 18 has been amended to read "a storage device for holding code data" instead for storing code data.

Applicants believe that all informalities or deficiencies have been cured.

Further, Applicants have presented new Claims 22 - 33 for consideration. These new claims recite the limitations that data stored in a first storage system and data stored

AUS920010863US1

Appl. No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

in a second storage system are incompatible with each other. Particularly, the preamble of the claims reads "system for storing data into a first and a second storage systems, the first storage system for storing data having a format compatible with format of data usable by a system, the second storage system for storing data having a format that is incompatible with format of data usable by the system."

No new matter has been added to the APPLICATION since on page 14, lines 3 - 11 it is stated that "[i]f the data resides in the other physical storage system, LVM₁ will request that LVM₂ convey the data. At that instant LVM₂ will instruct its own device driver to retrieve the data. Once retrieved, the data will be forwarded to LVM₁. When LVM₁ receives the data, **it will have to convert the data in a format that is understandable to the computer system.** When done, the data will then be forwarded to the file system manager (steps 705, 715, 720 and 725). (Emphasis added.) Further, in the DESCRIPTION OF THE INVENTION, Applicants have disclosed that it is the data stored in different storage systems that is incompatible with each other (see page 1 line 26 to page 2, line 18). Consequently, it is disclosed that the data stored in the second storage system is in a format that is incompatible with data usable by the computer system.

For the reasons stated more fully below, Applicants submit that the claims in the Application are allowable over the applied reference. Hence, reconsideration, allowance and passage to issue are respectfully requested.

AUS920010863US1

Page 23 of 26

Appl No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

As stated in the SPECIFICATION, one reason for data incompatibility is that some computer systems format data differently than others. Further, the differently formatted data is often stored into storage systems that are themselves formatted differently than those used by the other computer systems. For example, Sun Microsystems computer systems running Solaris operating system (OS) format and store data differently than IBM computer systems running AIX OS, although both Solaris and AIX OSs are UNIX-based OSs. Hence, data from a Sun Microsystems computer system is not compatible with data from an IBM computer system and vice versa.

Consequently, when a customer upgrades from a first set of computer systems that uses data that is formatted to be stored into a first storage system to a second set of computer systems that uses data that is formatted to be stored into a second storage system, if the data stored in the first and the second storage system are incompatible with each other, the first set of computer systems is not ordinarily used anymore. The data that was generated by the older computer systems may continue to be used if converted into a format compatible with the new computer systems. However, as is well known in the field, most conversion algorithms are not ideal and therefore, often times not all the data is converted. The present invention, however, allows data having a format that is incompatible with format of data used by a computer system to nonetheless be used by the computer system.

In accordance with the teachings of the invention, when storing data into two storage systems that are

AUS920010863US1

Appl. No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

incompatibly formatted with each other, the data is forwarded to two logical volume managers. Each one of the two logical volume managers manages one of the storage systems. Hence, the data will properly be formatted and stored into the appropriate storage system.

The invention is set forth in claims of varying scopes of which Claim 1 is illustrative.

1. A method of storing data into two storage systems, the two storage systems being incompatibly formatted with each other, the method comprising the steps of:
determining whether the data is to be stored into the two storage systems; and
forwarding the data, if the data is to be stored into the two storage systems, **to two logical volume managers (LVMs) for storing the data**, each one of the two LVMs managing one of the two storage systems.
(Emphasis added.)

The Examiner rejected the claims under 35 U.S.C §102(b) as being anticipated by St. Pierre et al. Applicants respectfully disagree.

St. Pierre et al. purport to teach a method and apparatus for backing up and restoring data in a computer storage system. In accordance with the teachings of St. Pierre et al., two storage devices are used, one storage device is used to store user data in real time and the other one is used to store a backup copy of the data. When data is to be backed up, it is retrieved from the storage device in which ordinary data is stored and forwarded to the storage device used for backing up the data.

AUS920010863US1

Page 25 of 26

Appl. No. 10/015,241
Amdt. dated 05/26/2004
Reply to Office Action of 03/08/2004

Thus, St. Pierre et al. do not teach, show or suggest **forwarding data to be stored to two logical volume managers (LVMS)** as claimed. Rather, data to be stored is sent to only one LVM, the LVM that manages the storage device in which user data is stored in real time.

Therefore, Applicants submit that Claim 1 and its dependent claims should be allowable. The other independent claims, including new Claims 20 - 31, and their dependent claims, which all incorporate the above-emboldened-italicized limitations shown in the reproduced Claim 1 above, should be allowable as well. Consequently, reconsideration, allowance and passage to issue are once more respectfully requested.

Respectfully submitted,
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AUS920010863US1

Page 26 of 26